REICHHOLD, INC.
Tacoma Facility

CORRECTIVE MEASURES PHASE I UPDATE - 2001

Interim Measures Recordkeeping and Reporting Requirements Permit Section IV.A.(7)

Prepared by
CH2M HILL
Bellevue, Washington

March 2002

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Creatively connecting knowledge and application.

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February 26, 2002

Office of Chemicals and Waste Management
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue
Seattle, Washington 98101

Subject: Reichhold, Inc., Tacoma, WA
Corrective Measures Phase 1 Update–2001

Enclosed is the Reichhold Tacoma Facility, *Corrective Measures Phase 1 Update–2001*. This report is submitted annually to EPA as a requirement under the Reichhold Tacoma Facility RCRA Permit , Section IV.A (7), Interim Measures Recordkeeping and Reporting Requirements.

I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Alan S. Jeroue, Tacoma Site Manager — 2-26-02 Date

Attachment

cc: Robbie Hedeen/U.S. Environmental Protection Agency, Region 10
Supervisor, Hazardous Waste Section/Washington State Department of Ecology
Environmental Commission/Puyallup Indian Tribe
Port of Tacoma

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Executive Summary

This 2001 Corrective Measures Phase 1 Update for the Reichhold, Inc. (Reichhold) Tacoma facility has been prepared in accordance with the Interim Measures Recordkeeping and Reporting Requirements of RCRA Permit No. WAD 009 252 891, Part IV.A. (7). In compliance with the permit, the Reichhold Tacoma facility continued to implement interim measures as required by the permit. Actions taken during 2001 included: (1) conducting the corrective action groundwater monitoring program, (2) operating the groundwater extraction and water treatment systems (WTS) on a continuous basis, 3) maintenance and periodic inspections of corrective measures implemented to date, (4) completing a marine outfall inspection for the Washington State Department of Ecology (Ecology), and (5) operation of an innovative pilot bioremediation technology in onsite engineered soil cells.

The shallow and intermediate aquifer extraction systems were operated on a continuous basis, except for maintenance and repair shutdowns, during 2001. Over 40 million gallons of groundwater were extracted and treated at the Tacoma site, along with leachate from the soil cells and excavations. The WTS discharges treated water to Blair Waterway through a marine outfall under a National Pollutant Discharge Elimination System (NPDES) permit.

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Introduction

This Corrective Measures Phase 1 Update - 2001 for Reichhold, Inc.'s (Reichhold) Tacoma facility has been prepared in accordance with Part IV.A.(7), Interim Measures Recordkeeping and Reporting Requirements of the RCRA permit. The Tacoma facility operates under a RCRA Corrective Action and Storage Permit No. WAD 009 252 891. In compliance with the permit requirements, this report summarizes the effects of the interim measures that were completed during 2001.

1.1 BACKGROUND AND CURRENT STATUS OF THE FACILITY

Reichhold has been working with the regulatory agencies (U.S. EPA Region 10 and the Washington State Department of Ecology) since 1986 to investigate, remediate, and permit the Tacoma site. Reichhold has conducted numerous investigations over that time, including a RCRA Facility Assessment (RFA) and RCRA Facility Investigation (RFI, referred to as the Preclosure Investigation). After the basic site characterization work was completed in the late 1980s, Reichhold continued to conduct ongoing monitoring and focused investigations as needed to support ongoing corrective actions at the site. Reichhold also installed several interim measures including the extraction, containment, and treatment systems for groundwater, which are described in this report. Reichhold's RCRA permit became effective on December 4, 1988. As required by permit conditions, a permit renewal application was submitted June 2, 1998, to the US EPA Region 10 (EPA) and Washington State Department of Ecology (Ecology).As acknowledged by the Agencies, Reichhold submitted a "timely and complete" application and therefore continues to operate under the conditions of the 1988 permit.

Groundwater Monitoring Program

Per the RCRA permit conditions, groundwater monitoring was initially conducted under the pre-corrective action monitoring program (PCAMP) during the installation of the interim hydraulic containment system for the shallow and intermediate groundwater aquifers. PCAMP monitoring was initiated January 1989 and ended March 1993. Following completion of the installation of this containment system, Reichhold began monitoring under the Corrective Action Monitoring Program (CAMP) program of the permit (July 1993 to present). The RCRA permit renewal application included site-specific groundwater protection standards, which are alternate concentration limits (ACLs) specified in 40 CFR 264 Subpart F.

Included within the permit renewal application were suggested changes to the groundwater protection standards (GWPS) for formaldehyde and inorganic constituents. This was previously submitted as a proposed permit modification request on December 16, 1996, to EPA. The changes included a revision to the GWPS for formaldehyde, currently at the Practical Quantitation Limit (PQL), to a risk-based level, as allowed by the permit. Additionally, for inorganics that are not associated with past practices at the facility, and/or are associated with the ASARCO smelter slag or other fill material used in the area surrounding the property, the application requested a change in the current GWPS to either

background values for the area or risk-based levels appropriate for the area Model Toxics Control Act Regulations (MTCA) Method C.

Site Cleanup

In addition to installing and operating the interim measures hydraulic groundwater containment and treatment systems, key site cleanup achievements have included:

- closing the four wastewater ponds (a RCRA-regulated hazardous waste land disposal unit, Unit 3)
- closing 2 RCRA drums storage areas (Units 4 and 32)
- completing remediation of:
  - two solid waste management unit (Units 7 and 12)
  - one additional potential area of interest (Unit 49)
- conducting a soil flushing field demonstration
- continuing soil remediation:
  - designing and constructing two onsite engineered soil cells
  - initiating a pilot scale innovative bioremediation process for soil from identified source areas
  - during the summer of 1997, soil from the former pentachlorophenol plant (a RCRA-regulated unit, Unit 24) and the North Extension (solid waste management unit, Unit 7) was excavated and placed in separate onsite engineered soil cells
  - during 1998, bioremediation of the placed soils was initiated in these cells
  - soil bioremediation continued to progress from 1998-2001
  - disposing of 6000 cy of PCB-contaminated soil at an offsite TSCA permitted landfill in 2001.

To date, Reichhold has completed many investigations and actions at the site including the analysis of numerous soil and groundwater samples. Reichhold has spent more than 35 million dollars completing the requirements of the RCRA process and responding to agency and citizen concerns about the site. Reichhold's record demonstrates responsible stewardship of the facility under the RCRA program.

1.2 REPORT ORGANIZATION

The information presented in this report is organized sequentially after Section IV.A.(7) of the permit. Section IV.A.(7) of the Reichhold Tacoma Facility RCRA Permit reads as follows:

> ***Within fifteen (15) months after the effective date of this permit, and annually thereafter, the Permittee shall submit a report summarizing the effects of the interim measures. This report shall include:***
>
> ***(a) Groundwater progress reports including the demonstrations required under condition V.C.(1)(f), groundwater flow maps, and summary of groundwater analyses to date;***
>
> ***(b) Summaries of maintenance activities;***
>
> ***(c) Summaries of inspection results;***

(d) Summaries of all records of the interim measures activities (including any cessation of pumping and treating and measures taken to mitigate and prevent further cessation); and,

(e) Progress reports on construction activities or a certification of completion construction of interim measures in accordance with accepted plans by a registered independent professional engineer including as-built drawings and any modifications of plans due to as-builts and/or notifications of changes in monitoring and/or operating status.

(f) The Permittee shall maintain as part of the operating record, a log book of all maintenance activities including any cessation of pumping and treating, and measures taken to mitigate and prevent further cessations.

SECTION IV.A.(7)(a)

Groundwater Progress Reports

Section IV.A.(7)(a) reads as follows:

> ***...groundwater progress reports including the demonstrations required under condition V.C.(1)(f), groundwater flow maps, and summary of groundwater analyses to date.***

Groundwater progress reports consist of submittals containing:

- Water quality monitoring analytical data and evaluations
- Water level monitoring data, groundwater flow maps, and analysis

During 2001, four quarterly and one annual groundwater progress reports were submitted under separate cover to US EPA Region 10 (EPA) and other parties per Reichhold's RCRA permit. This section presents a summary of the current status of the offsite and onsite extraction systems and outlines the groundwater progress reports submitted in 2001 pursuant to Section V.C., Corrective Action Groundwater Monitoring Program (CAMP).

OFFSITE INTERMEDIATE AQUIFER EXTRACTION SYSTEM

The offsite intermediate aquifer extraction system was operated at maximum sustainable output continuously throughout 2001 except for maintenance shutdowns of the Water Treatment System (WTS). Approximately 9.1 million gallons of groundwater were removed from the offsite area. An assessment of the offsite extraction systems' ability to meet hydraulic performance standards is included in the *Annual Groundwater System Performance Report–2001,* (CH2M HILL, 2002). This report was submitted to EPA and Ecology on February 18, 2002.

ONSITE INTERMEDIATE AQUIFER EXTRACTION SYSTEM

During 2001, the sustainable onsite intermediate aquifer extraction system was operated continuously at maximum output except for maintenance shutdowns of the WTS. Approximately 21.1 million gallons of groundwater were extracted from the onsite intermediate aquifer system in 2001. An assessment of the onsite extraction systems' ability to meet hydraulic performance standards is included in the *Annual Groundwater System Performance Report–2001.*

SHALLOW AQUIFER INTERCEPTOR DRAIN SYSTEM

The shallow interceptor drain (SID) was operated continuously during 2001. During the summer months parts of the shallow aquifer typically go dry and although the system is on, water is extracted only as it becomes available in sufficient quantity to pump. Approximately 8.4 million gallons of groundwater was captured and extracted by the SID in 2001.

DATA EVALUATION

Section V.C.(1)(f) of the permit, Data Evaluation and Modifications to the Groundwater Corrective Action Plan, is a subdivision of Section V.C.(1), Corrective Action Monitoring Program, which reads as follows:

> ***The Permittee shall implement the corrective action monitoring program for the appropriate phase (onsite intermediate, offsite intermediate, and shallow aquifer) after completion of the installation of an extraction system. Each phase of the program shall be implemented not more than ninety (90) days after the date of completion of the construction for that phase, and not more than ninety (90) days after a pre-corrective action monitoring sampling. The Permittee will continue corrective action monitoring for an area until the Groundwater Protection Standard (Table 7 page 70 of this permit) is met for at least one year in accordance with Condition V.C.(2). The Permittee shall implement the corrective action monitoring program described as follows.***

Reichhold began groundwater monitoring activities under the CAMP with the July 1993 event. Modifications to the CAMP were approved on October 6, 1993, and March 1995. Monitoring under the modified CAMP continued during 2001. Water quality monitoring analytical data evaluations for 2001 and water level elevation data were provided to the EPA as specified by Reichhold's RCRA permit. Report and transmittal dates are summarized in Table 1.

Table 1
Quarterly Groundwater Data Submittals

Data Submittal	Document Date	Transmittal Date
31st Quarter (January 2001) Corrective Action Groundwater Monitoring Results	March 2001	March 19, 2001
32nd Quarter (April 2001) Corrective Action Groundwater Monitoring Results	May 2001	May 14, 2001
33rd Quarter (July 2001) Corrective Action Groundwater Monitoring Results	October 2001	October 23, 2001
34th Quarter (October 2001) Corrective Action Groundwater Monitoring Results	November 2001	November 19, 2001
Annual Groundwater System Performance Report – 2001	February 2002	February 18, 2002

SECTION IV.A.(7)(b)

Summaries of Maintenance Activities

Section II.A.(2) of the permit, Proper Operation and Maintenance, specifies the following:

> ***The Permittee shall, at all times, properly operate and maintain in accordance with sound engineering and scientific practice, all facilities and systems of treatment and control (and related appurtenances), which are installed or used by the Permittee so as to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this permit.***

In addition, Section II.I.(2)(k) requires that **"the facility operation and maintenance records and reports as required by this permit"** be recorded in the written operating record at the facility.

As required by the permit, maintenance records for the following were kept as separate logs or noted on inspection reports and filed in the operating record at the facility:

- Groundwater Monitoring Wells
- Extraction Systems
  - Offsite Intermediate Aquifer Extraction System
  - Onsite Intermediate Aquifer Extraction System
  - Shallow Aquifer Interceptor Drain System
- Water Treatment System
- Site Cover
- Drum Storage Area
- Safety Equipment
- Fire Protection Systems
- Security and Fences

GROUNDWATER MONITORING WELLS

Annual well soundings were conducted in October 2001 for each groundwater monitoring well at the Tacoma site. Minor well-related maintenance activities performed during 2001 included:

- Pruning back vegetation from over-grown well locations and access routes
- Lubricating well locks and protective casing hinges
- Inspecting concrete surface seals (repair and replace where needed)
- Installing new well caps where needed
- Repainting well identification numbers
- Repainting protective casings as needed
- Replacing loose bollards where needed

EXTRACTION SYSTEMS

The shallow and intermediate aquifer groundwater extraction systems were operated continuously in 2001 except for short-duration maintenance shutdowns, a 4-day shut down to modify piping system for the SID during August, and area wide power outages.

Maintenance activities for the SID included:

- Removed, cleaned, and replaced SID check valves
- Replaced overloads in Sump Pump #1
- Replaced starter and overload relay in Sump #1
- Replaced pump with backup pump in Sump #1
- Installed internal meter parts on Sump #3
- Installed internal meter parts on Sump #4
- Installed new valve on Sump #4
- Replaced Sump Pump #4
- Replaced Sump Pump #6
- Installed internal meter parts on Sump #6
- Replaced shut off valve on Pump #6
- Replaced gasket on totalizer for Sump #6

Maintenance on the intermediate aquifer extraction wells included:

- Replaced valve and actuator: EW-6, EW-10
- Installed shut off valve

WATER TREATMENT SYSTEM

Operation of the WTS typically requires maintenance activities to be conducted by Reichhold personnel on a continuous basis. A maintenance summary form was completed on a daily basis to record activities as they were carried out. Routine maintenance of the UV/peroxide reactor system was completed at least twice monthly by Electric Construction Company. The quartz tubes associated with the ultraviolet lights were manually cleaned on a semi-monthly basis and replaced as needed. The ultraviolet light bulbs were replaced after approximately 2,500 hours of reactor operation.

Maintenance activities were performed on the following WTS equipment throughout the year:

- Back flushing the granular activated carbon filter units
- Checking eye wash stations periodically
- Cleaning the influent lines
- Maintaining the clarifier
- Servicing air compressor
- Cleaning tank level probes
- Servicing the reactor
- Emptying and cleaning the filter press
- Recalibrating effluent totalizer meter

The following equipment was installed, rebuilt, or replaced:

- Built strut support for tanks and lines
- Built pipe rack above sludge tank for electrical pipes
- Installed support bracket on clarifiers stack elements
- Installed new level detection Drexel Brook Cable Probe in T-10
- Installed new level transducer into T-10
- Installed new air hose and valve on clarifier and M-4
- Installed screen influent side of M-4 diaphragm pump
- Installed new fabric on backwashable filters
- Installed new motor in Keystone actuator
- Installed new ballest reactor chamber #5
- Rebuilt and installed Keystone valve
- Rebuilt spare pulsatron pump for peroxide injection into U.V. Reactor
- Rebuilt lamp support springs
- Rebuilt new style M-4 air pump that feeds press
- Rebuilt peroxide injection pump for reactor
- Rebuilt reactor shuttles
- Replaced the filter press plate and frame clothing
- Replaced LMI that feeds peroxide into T-7
- Replaced polyblend driver belt
- Replaced polyblend LMI pump head
- Replaced the polyblend LMI polymer injection pump
- Replaced the polyblend check valve and installed new bushing
- Replaced air burpers on top of carbon tanks
- Repaired and maintained peroxide loop
- Replaced heat tape and valves on carbon tank

SITE COVER

Routine maintenance was performed on the site cover during 2001, which included mowing of grass covered areas and removal of grasses and other vegetation on asphalt covered areas. Additionally, several areas around the former Treated Fiber Products building and former drum storage area (Unit 32) were seal coated in 2001.

DRUM STORAGE AREA

Routine maintenance was performed at the site drum storage area Unit 51 during 2001. Routine maintenance performed in DSA Unit 51 during 2001 included maintaining clear access routes to the DSA, inspections, repairs, and routine cleaning.

SAFETY EQUIPMENT

Minimal maintenance was required for safety equipment during the year. First-aid kits were inventoried on a regular basis and the items missing were replaced. Eyewash stations were inspected and repaired as needed by Reichhold personnel.

FIRE PROTECTION SYSTEMS

Fire protection systems are monitored constantly by ADT. Smith Fire Systems, Inc. annually conducts an inspection and test of the sprinkler system. Fire extinguishers were inspected

monthly by Reichhold personnel and all fire protection systems received an annual review by the Tacoma Fire Department. Maintenance items included freeze protection of the sprinkler systems in the warehouses, and inspection and recharging of fire extinguishers in active portions of the facility.

Reichhold received approval in September 2001 from USEPA Region 10 for a Class 1 permit modification. The modification removed the inspection and maintenance requirements for fire extinguishers located in site buildings that no longer exist and/or were not used to manage hazardous waste. These buildings are Warehouse No. 1, Warehouse No. 2, the Boiler Building, the Mix Building, and the Treated Fiber Product Buildings No. 1, 2, and 3.

SECURITY AND FENCES

During 2001, warning signs were inspected and replaced as needed at the facility. Gates for the security fence around the site were serviced several times during the year as needed.

SECTION IV.A.(7)(c)

Summaries of Inspection Results

Section II.E. of the permit, Inspection Plan, reads as follows:

II.E.(1) ***The Permittee shall follow the procedures of the approved Inspection Plan.***

II.E.(2) ***The Permittee shall remedy any deterioration or malfunction discovered by an inspection as soon as practical as required by 40 CFR 264.15(c). Inspection reports shall be recorded and maintained as required by 40 CFR 264.15(d) for at least three years from inspection date.***

II.E.(3) ***The Permittee shall maintain a copy of the Inspection at the facility until post-closure is completed and certified in accordance with I.N.***

II.E.(4) ***The Permittee may add inspection requirements to an existing inspection form in cases where such additional requirements will result in a more comprehensive or detailed Inspection Plan without receiving a permit modification. The Permittee must place in the operating record such a revised inspection form, accompanied by a narrative explanation, and the date the revision became effective.***

II.E.(5) ***The Inspection Plan is revised to include:***

(a) ***a daily inspection of the loading and unloading areas to assure that no waste materials have accumulated in the area during daily operations;***

(b) ***personal protective equipment in addition to the SCBA (items that shall be listed include respirators, hard hats, gloves, and boots);***

(c) ***the fire sprinkler system and the items on the emergency equipment list as amended by II.G.(1) are added to the inspection logs; and***

(d) ***the printed and handwritten signature of the inspector and the time of the inspection are added to the inspection logs.***

As required by the permit, inspection records were maintained and filed for the following in the operating record at the facility:

- Groundwater Monitoring Wells
- Extraction Systems
- WTS
- Site Cover
- Drum Storage Area
- Safety Equipment
- Fire Protection Systems

- Security and Fences
- NPDES Permit and Marine Outfall

Inspections were conducted according to the requirements and schedules specified in the RCRA Permit and applicable RCRA regulations. Records of the inspections are maintained in the operating record at the facility for the periods specified in the permit.

GROUNDWATER MONITORING WELLS

Groundwater monitoring wells were inspected during quarterly monitoring and during the annual well sounding and maintenance events. Based on 2001 well sounding data, no monitoring wells or SID piezometers exceeded one foot of accumulated sediments.

EXTRACTION SYSTEMS

Shallow and intermediate aquifer extraction systems were inspected during quarterly monitoring events as part of CAMP and during the annual well sounding and maintenance event. No problems were noted during the quarterly and annual inspections.

WATER TREATMENT SYSTEM

A daily operating log that included inspection items was maintained for the WTS. Inspection activities were also recorded on a daily basis on the maintenance summary form. The UV/peroxide reactor was inspected at least twice monthly.

The WTS inspections focused primarily on extraction well flow, maintenance, and alarm functioning. Minor instances of leakage from valves, flanges, and seals were noted during the year and the leaking items were repaired or replaced as necessary. All leakage was contained within the secondary containment area of the WTS.

Process control instruments, such as level and pressure indicators and pH meters, were checked routinely and recalibrated as necessary. The effluent flow meter was temporarily removed from the WTS and sent to the factory for recalibration as required by Reichhold's NPDES permit. A back-up meter was installed in lieu of the primary flow meter during recalibration.

SITE COVER

The site cover was inspected on an annual basis for integrity and maintenance of surface grade.

DRUM STORAGE AREA

Satellite drum storage areas were inspected daily for the presence of accumulated waste. The drum storage areas were inspected weekly for container condition and labeling, sufficient aisle space and exit clearance, secondary containment condition, waste compatibility, and the presence of spill kits and spill response postings. Drum storage area 51 was inactive during 2001.

SAFETY EQUIPMENT

Personal protective equipment and spill response kits were inspected weekly for completeness of inventory and proper functioning. No discrepancies were noted. Eyewash stations were inspected during monthly site inspections to insure proper operation, missing

or damaged parts were replaced. First-aid kits were inventoried on a regular basis and items missing were replaced.

FIRE PROTECTION SYSTEMS

Fire extinguishers were inspected monthly, and hydrants were inspected semi-annually. The fire sprinkler system received an annual inspection. No significant deficiencies were noted.

Reichhold received approval in September 2001 from USEAP Region 10 for a Class 1 permit modification. The modification removed the inspection and maintenance requirements for fire extinguishers located in site buildings that no longer exist and/or were not used to manage hazardous waste. These buildings are Warehouse No. 1, Warehouse No. 2, the Boiler Building, the Mix Building, and the Treated Fiber Product Buildings No. 1, 2, and 3.

SECURITY AND FENCES

The facility fence and security systems were inspected daily. Minor deficiencies were noted and addressed.

NPDES PERMIT AND MARINE OUTFALL

Reichhold's marine outfall on the Blair Waterway was inspected once during 2001 as required for the NPDES Permit issued by Washington State Department of Ecology (Ecology). The marine outfall inspection was performed in March 7, 2001 by divers. No deficiencies were noted.

SECTION IV.A.(7)(d)

Summaries of Records of Interim Measures Activities

Section IV.A.(7)(d) reads as follows:

> *. . . summaries of all records of the interim measures activities (including any cessation of pumping and treating and measures taken to mitigate and prevent further cessations,). . .*

The summary of records for the following interim measures and activities are discussed in this section:

WTS
- -2001 Operations
- - NPDES Permit and Marine Outfall
- - System Modifications

Water Treatment System

Groundwater from all intermediate aquifer extraction wells, SID sumps, and engineered soil cells was processed through the onsite WTS in 2001. Table 2 provides a summary of the volumes of water processed from January through December 2001.

During 2001, all water treatment system residual solids removed from the WTS process stream were dewatered by the filter press and placed in the bulk solids storage building located in the Main Disposal Area to dry under ambient conditions.

Table 2
Water Treatment System Operation Summary
(January to December 2001)

Month	Total Volume Processed and Discharged (gallons)
January	4,165,222
February	3,491,900
March	3,528,498
April	3,661,745
May	3,410,704
June	2,897,691
July	2,917,584
August	2,469,974
September	2,586,898
October	2,923,490
November	3,757,655
December	5,788,510
Grand Total for 2001	41,599,871

2001 OPERATIONS

Continuous discharge from the Reichhold Tacoma facility WTS to Blair Waterway under the NPDES permit began on August 1, 1994. The system operated continuously throughout 2001 except for routine maintenance shutdowns. Effluent was sampled weekly as required by the permit, with a maximum daily allowable pentachlorophenol discharge limit of 25 µg/L. The annual average concentration of pentachlorophenol in the effluent during 2001 was below detection limit at 1.0 µg/L. The 2001 analytical results of the effluent sampling indicate that Reichhold was in compliance with NPDES permit discharge limit.

NPDES PERMIT AND MARINE OUTFALL

The renewed NPDES permit was issued by Ecology on December 16, 1999, and went into effect February 1, 2000. The permit allows for continuous discharge of treated groundwater to Blair Waterway through a marine outfall. Discharge through the marine outfall continued through the end of 2001 at an average flow rate of 113,972 gallons per day.

SYSTEM MODIFICATIONS

Onsite engineered soil cells 3 and 4 became operational in 1997 and contributed leached rain water to the WTS. During 1998, a sprinkler system was installed in conjunction with implementation of the bioremediation process for the soil contained in the cells. In 2001 the total volume of water from the onsite engineered soil cells 3 and 4 treated by the WTS was 489,900 gallons.

Storm water and shallow aquifer groundwater from the former pentachlorophenol plant area excavation was pumped out during 2001. The water in the excavation was removed when sufficient volume was present to pump. This water was treated at the WTS. The total volume of water from the former pentachlorophenol plant area was 506,850 gallons.

SECTION IV.A.(7)(e)

Progress Report on Construction Activities

Section IV.A.(7)(e) reads as follows:

> *. . . progress reports on construction activities or a certification of completion of construction of interim measures in accordance with accepted plans by a registered independent professional engineer including as-built drawings and any modifications of plans due to as-builts and/or notifications of changes in monitoring and/or operation status.*

- None to report.

Other:

- None to report.

SECTION IV.A.(7)(f)

Log Book of Maintenance Activities

Section IV.A.(7)(f) reads as follows:

> ***The Permittee shall maintain as part of the operating record, a log book of all maintenance activities including any cessation of pumping and treating, and measures taken to mitigate and prevent further cessations.***

As part of routine operations, Reichhold maintains a log book that contains all inspection and maintenance forms. The log book containing the original forms is located onsite and is available for inspection.

OTHER CORRECTIVE MEASURE ACTIVITIES

With the assistance of Grace Bioremediation Technologies (Grace), Reichhold completed its evaluation of the innovative bioremediation technology application to contaminated site soils in Cell 4 in 2000. Reichhold has determined that the application of the proprietary bioremediation amendment (DARAMEND) was effective at reducing concentrations of chlorinated phenol compounds in these soils. However, its effectiveness for reduction in concentration of Aroclor 1248 was limited.

In October 2000, Reichhold submitted a request to EPA Region 10 for approval to remove and transport the soils onsite in Cell 4 to an offsite TSCA landfill. Reichhold received approval in a letter from EPA dated February 26, 2001. EPA concurred with Reichhold's proposal to dispose of the soils at an offsite permitted TSCA landfill, with the provision that Reichhold's actions must be in compliance with all RCRA and TSCA regulations.

The soils from Cell 4 were removed during July and August of 2001 for disposal at a TSCA Landfill located in Arlington, Oregon. The total amount disposed was 6,212.31 tons.

The soils in Cell 3 remained static in 2001 while Reichhold worked with Ecology to find an acceptable disposition solution. That effort remains in progress.